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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/663,318	09/16/2003	Bulent Basol	NT-108C1-US	1934

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EXAMINER	
LE, THAO X	

ART UNIT	PAPER NUMBER
2814	

DATE MAILED: 04/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

R·A

Office Action Summary	Application No.	Applicant(s)	
	10/663,318	BASOL ET AL.	
	Examiner	Art Unit	
	Thao X. Le	2814	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 February 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-2, 5-6, 11-14 are rejected under 35 U.S.C. 102(e) as being anticipated by US 6471913 to Weaver et al.

Regarding claim 1, Weaver discloses a process of fabricating conductive structures in features of an insulator layer in fig. 2A-2G comprising: applying a layer of conductive material 425/440, column 7 line 66 and column 8 line 7, over the insulator 410, column 7 line 31, so that the layer of conductive material 425/440 covers field regions (outside area 415) adjacent the features 415, column 7 line 39, and fills in the features 415, annealing the layer of conductive material 425/410, column 8 lines 44-46, to establish a grain size differential between the conductive material 425/410 which covers said field regions and the conductive material 410 which fills in the features 415 by forming small grains, column 8 line 4, in the conductive material 425 covering the field regions and large grains in the conductive material 440, fig. 2E, over and filling the

feature 415s, and removing the conductive material, fig. 2F, with small grains faster than the conductive material with large grains.

With respect to 'removing the conductive material with small grains faster than the conductive material with large grains' is only a statement of the inherent properties of the process. Weaver discloses the structure and process are identical or substantially identical processes to the claimed, a *prima facie* case of either anticipation or obviousness has been established. *In re Best*, 195 USPQ 430, 433 (CCPA 1977) and MPEP 2112.01.

Regarding claim 2, Weaver discloses the process wherein the layer of conductive material 425/440 applied as to define a first layer 425 thickness over said field regions and a second layer 440 thickness in and over the features 415, fig. 2E.

Regarding claims 5-6, Weaver discloses the process wherein applying the layer of conductive 440 over the insulator layer 410 includes depositing the layer of conductive material 440, and partially removing the layer of conductive material 440 from over said field regions to establish a desired thickness differential between the first and second layer thickness, wherein applying the layer of conductive material 440 over the insulator layer 410 includes depositing a planarized layer of conductive material 440 over the insulator layer 410 to establish a desired thickness differential between the first and second layer thickness, fig. 2F.

Regarding claim 11-12, Weaver discloses the process wherein the conductive material 440 is copper or copper alloy, column 1 line 39.

Regarding claims 13-14, Weaver discloses the process wherein removing the excess conductive material 440 done by chemical mechanical polishing, chemical etching, electrochemical etching, any combination of chemical mechanical polishing, chemical etching and electrochemical etching, column 8 line 56, wherein establishing said grain size differential also establishes a differential in chemical removal rates, physical removal rates, or both chemical and physical removal rates at which the excess conductive material can be removed from over said field regions and over said features, column 8 lines 60-67.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 3-4, 7-10, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6471913 to Weaver et al.

Regarding claims 3-4, 7-10, Weaver does not discloses the process wherein the first layer thickness and the second layer thickness are dimensioned such that $d_1 \leq 0.5d_2$ or $d_1 \leq 0.3d_2$ with d_1 being the first layer thickness and d_2 being the second layer thickness.

However, Weaver discloses the process wherein the first layer thickness 425 is thinner than the second layer thickness 440,fig. 2E. Accordingly, it would have been obvious to one of ordinary skill in art to use the thickness teaching of Weaver in the range as claimed, because it has been held that where the general conditions of the claims are discloses in the prior art, it is not inventive to discover the optimum or workable range by routine experimentation. See In re Aller, 220 F.2d 454, 105 USPQ 233, 235 (CCPA 1955).

Regarding claim 15, Weaver does not disclose the process where removing comprised CMP having a chemical component dominant over a physical component.

However, Weaver discloses the CPM removal rate can influence by the particular CMP slurry, column 9 lines 1-10. The slurry is a chemical component while the pressure or speed is the physical component of the CMP process. Accordingly, it would have been obvious to one of ordinary skill in art to use the CPM teaching of Weaver as claimed, because it has been held that where the general conditions of the claims are discloses in the prior art, it is not inventive to discover the optimum or workable range by routine experimentation. See In re

Aller, 220 F.2d 454, 105 USPQ 233, 235 (CCPA 1955). In addition, where patentability is to be based upon particular chosen dimension or upon another variable recited in a claim, the applicant must show that the chosen dimensions or variables are critical. In re Woodruff, 919 F2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

Response to Arguments

6. Applicant's arguments filed on 28 Feb. 2005 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thao X. Le whose telephone number is (571) 272-1708. The examiner can normally be reached on M-F from 8:00 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael M. Fahmy can be reached on (571) 272 -1705. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Thao X. Le
15 April 2005

LONG PHAM
PRIMARY EXAMINER